CLAIMS

1. Multielectrode (5) comprising a carrier (8) provided with separate electrode surfaces for improved recording of the bioelectrical potential difference/s/ at one detection site (4), **characterized in** that said separate electrode surfaces include one or more active electrode surfaces (6) and two or more reference electrode surfaces (7a, 7b) for providing two or more recording pairs (9a, 9b), each of said active electrode surface (6) participating in more than one of said recording pairs (9a, 9b) for recording said bioelectrical potential difference/s/ multiple times at the same detection site (4), the recording pairs adapted to be connected to processing means comprising inversion means and summation means (12) to provide an improved signal-to-noise ratio of said recorded bioelectrical potential difference/s/.

2. Multielectrode according to claim 1, **characterized in** that the active electrode surfaces (6) are centrally positioned on the surface area of the carrier (8).

3. Multielectrode according to claim 2, **characterized in** that the reference electrode surfaces (7a, 7b) are symmetrically positioned between the active electrode surfaces and the edge delimiting the surface area of the carrier.

4. Multielectrode according to claim 1, **characterized in** that the carrier (8) consists of two or more separate sub-carriers, each sub-carrier provided with at least one separate electrode surface, the total number of electrode surfaces being at least three.

5. Multielectrode according to any of the previous claims, **characterized in** that the active electrode surfaces (6) all have a substantially similar size and shape.

6. Multielectrode according to any of the previous claims, **characterized in** that the reference electrode surfaces (7a, 7b) all have a substantially similar size and shape.

7. Multielectrode according to any of the previous claims, **characterized in** that the size and/or shape of the reference electrode surfaces (7a, 7b) is substantially different from the size and/or shape of the active electrode surfaces (6).

8. Multielectrode according to any of the claims 1 - 6, **characterized in** that electrode surfaces all have a substantially similar size and shape.

9. Multielectrode according to any of the previous claims, **characterized in** that the surface of the carrier (8) is provided with elevated parts to which electrode surfaces are attached.

10. Multielectrode according to claim 9, **characterized in** that at least one of the electrode surfaces extends on the sides of the elevated parts of the carrier surface.

11. Multielectrode according to any of the claims 1 - 8, **characterized in** that the carrier (8) is provided with recesses into which electrode surfaces are fitted.

12. Multielectrode according to claim 11, **characterized in** that at least one of the electrode surfaces extends on the sides of the recesses in the carrier.

13. Multielectrode according to claim 11 or 12, **characterized in** that the recesses in the carrier (8) are delimited by vertical edges elevated from the surface of the carrier,

thereby preventing short-circuiting between adjacent electrode surfaces.

14. Multielectrode according to any of the previous claims, **characterized in** that electrically conducting means is attached to at least some of the electrode surfaces.

15. Multielectrode according to any of the previous claims, **characterized in** that the carrier (8) and/or the electrode surfaces are provided with an adhesive for attaching the multielectrode (5) to the detection site (4).

16. Multielectrode according to any of the claims 1 - 8, **characterized in** that the carrier (8) with the electrode surfaces is formed by one or more thin layer/s/ of an insulating material provided with a pattern of electrically conducting electrode surfaces.

17. Multielectrode according to any of the claims 1 - 8 **characterized in** that the carrier (8) is provided with three or more sterilized needles, of which each needle tip constitutes at least part of an electrode surface.

18. A method of processing signals indicating bioelectrical potential differences at a detection site (4), said signals recorded by a multielectrode (5) according to any of the claims 1-17, **characterized by** a summation of the signals recorded at said detection site by at least two recording pairs (9a, 9b) of the multielectrode (5).

19. A method according to claim 18, **characterized by** an inversion of at least one of the signals prior to the summation.

20. A method according to claim 18 or 19, **characterized by** a delay from the starting point of the induced response

before inversion of at least one of the signals prior to the summation.

21. A method according to any of claims 18 - 20, **characterized by** muting of at least part of one or more signals prior to the summation.

22. A process of manufacturing a multielectrode (5) according to any of the claims 1 - 17, **characterized in** that at least part of the process is manual.

23. A process of manufacturing a multielectrode (5) according to any of claims 1 - 17, **characterized in** that at least part of the process is performed by mechanical manufacturing means.

24. A process according to claims 22 or 23 of manufacturing a multielectrode (5), **characterized by** the following steps:
- Manufacturing thin layers of an insulating material;
- Providing some of the layers with patterns of electrode surfaces;
- Folding, fastening and/or glueing the layer/s/ together.

25. A system for recording signals indicating bioelectrical potential differences at a detection site (4), **characterized in** that the system comprises at least one multielectrode (5) according to any of the claims 1 - 17 and processing means connected to said multielectrodes, said processing means comprising summation means (12) and inversion means.

26. A system for recording signals, according to claim 25, **characterized in** that said processing means comprises delay means.

27. A system for recording signals, according to any of the claims 25 - 26, **characterized in** that said processing means comprises muting means.